# *Pit and Fissure Sealants*

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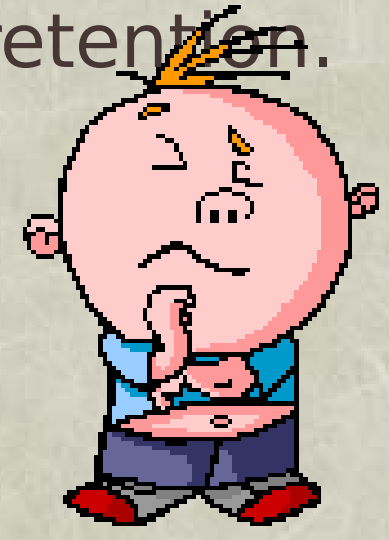
# *Objectives*

- Overview of dental sealants
- Select the criteria for selecting teeth
- Determine the steps to place sealants
- Perform sealant placement

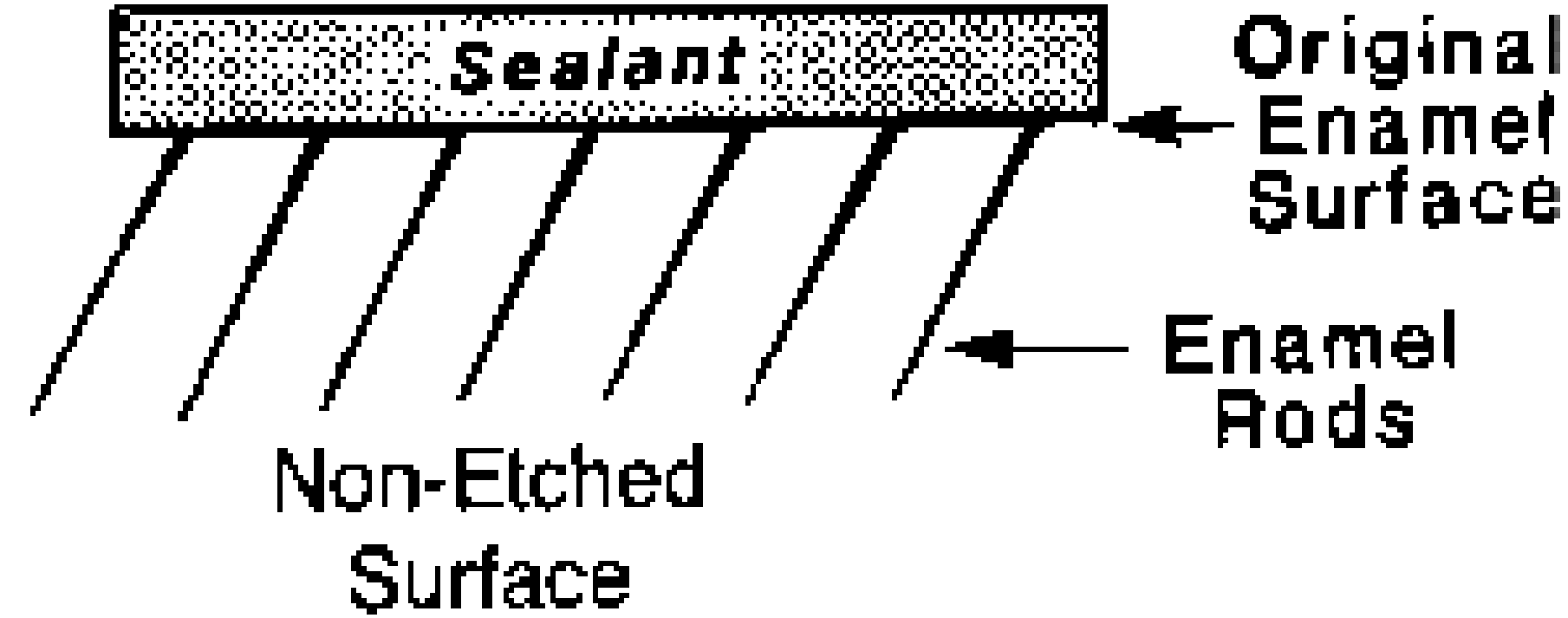
# *Pit and Fissure Sealants*

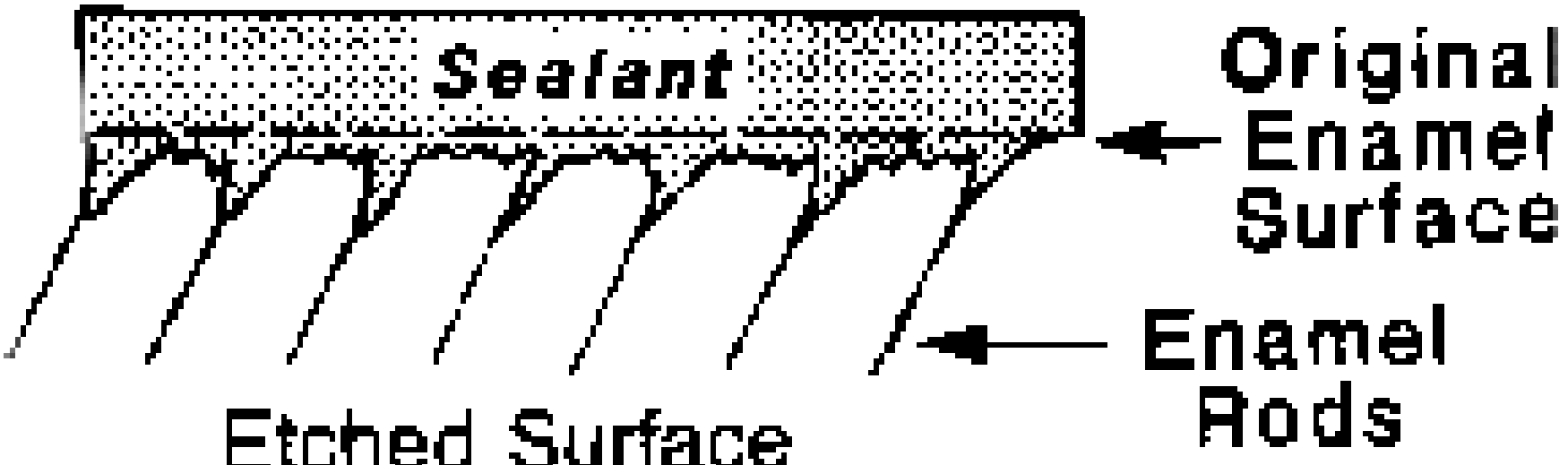
- Defined
  - An organic polymer (resin) that flows into the pit or fissure and bonds to the enamel surface mainly by mechanical retention.



# *What is Mechanical Retention?*

- Physical adherence of one substance to another
- Sealant adheres to the enamel
- Acid etching (conditioner) leaves microspaces between the enamel rods - sealant locks into spaces


Sealant
Original Enamel Surface
Enamel Rods
Non-Etched Surface


Sealant
Original Enamel Surface
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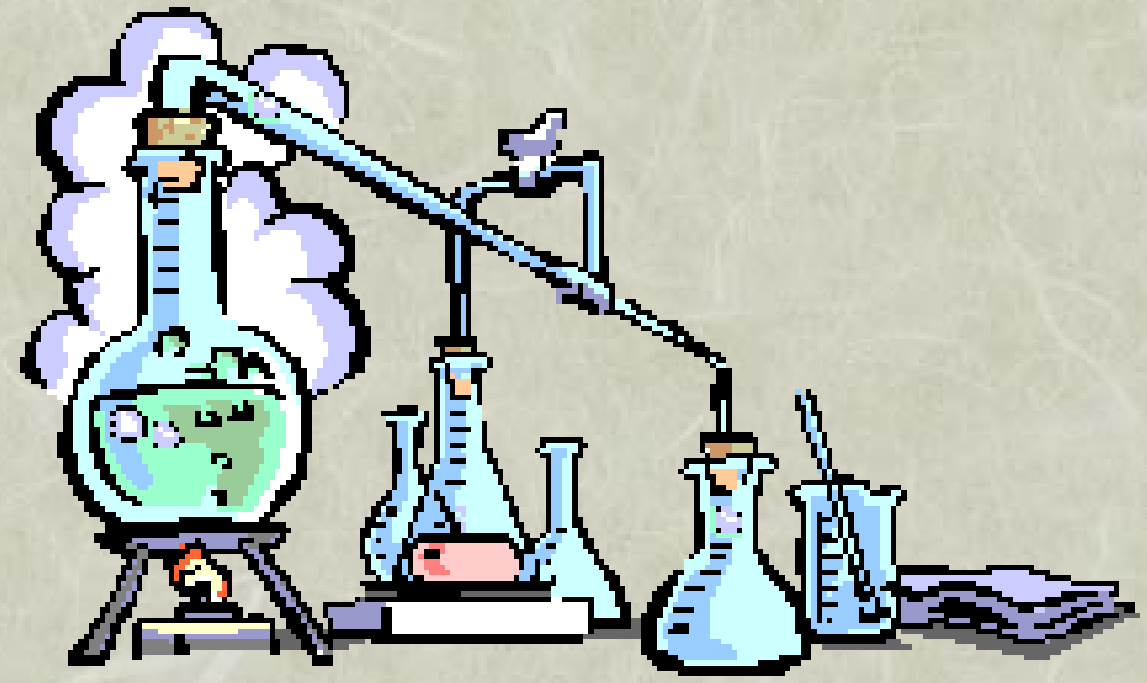
# How do sealants work?



# *How do sealants work?*

- Act as a physical barrier by sealing off pits & fissures
- Prevent bacteria from collecting within a pit or fissure
- Noninvasive procedure- replace as needed

# *Two Types of Sealants*

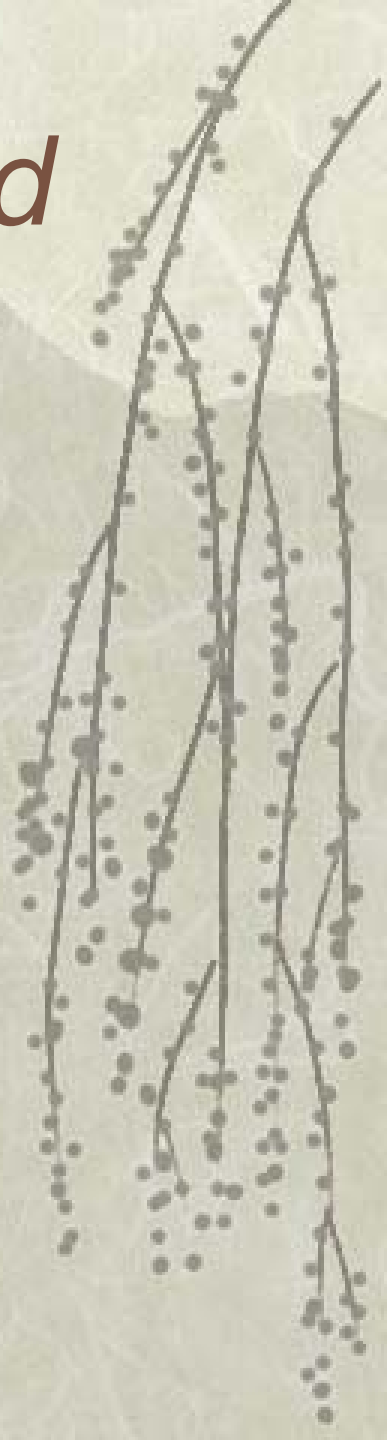
- Chemical polymerized - (auto cured)
- Photopolymerized - (light cured)

# *Chemical Polymerized (Autopolymerized)*

- Two liquids mixed together

  - Mix catalyst with a base

- Low cost
- Working time limited
- No control over set time



# *Photopolymerized (Visible-Light-Cured)*

- Hardened when exposed to light
- More working time than chemical
- Visible light directed at sealant starts the curing process
- No mixing required
- Control set time

# *Criteria for Selecting Teeth Needing Sealants*

- Contour of pits & fissures
- Age
- Caries
- Prevention Program

# *Indications*

- Deep pit and fissures
  - Occlusal surfaces
  - Facial pits (buccal of mandibular molars)
  - Palatal pits (Cusp of Carabelli)
  - Cingulum pits(palatal of max. ant. teeth)

# Indications (Con't)

- Incipient (just beginning) decay
- Newly erupted teeth
- Patient with a high caries rate in past

# *Steps in Placement*

- Select teeth according to criteria and indications
- Clean the tooth surface by removing deposits & debris with a mixture of pumice& water and suction
- Recheck area with explorer to ensure all debris is removed

# *Isolate the Teeth to be Sealed*

- Purpose
  - keep dry
  - eliminate contamination from saliva
  - keep materials from touching oral tissues (unpleasant taste)
- Types of Isolation
  - rubber dam
  - cotton rolls

# *Dry Tooth/Teeth to be Treated*

- Purpose
  - prepare area for conditioner
  - prevent dilution of the conditioner

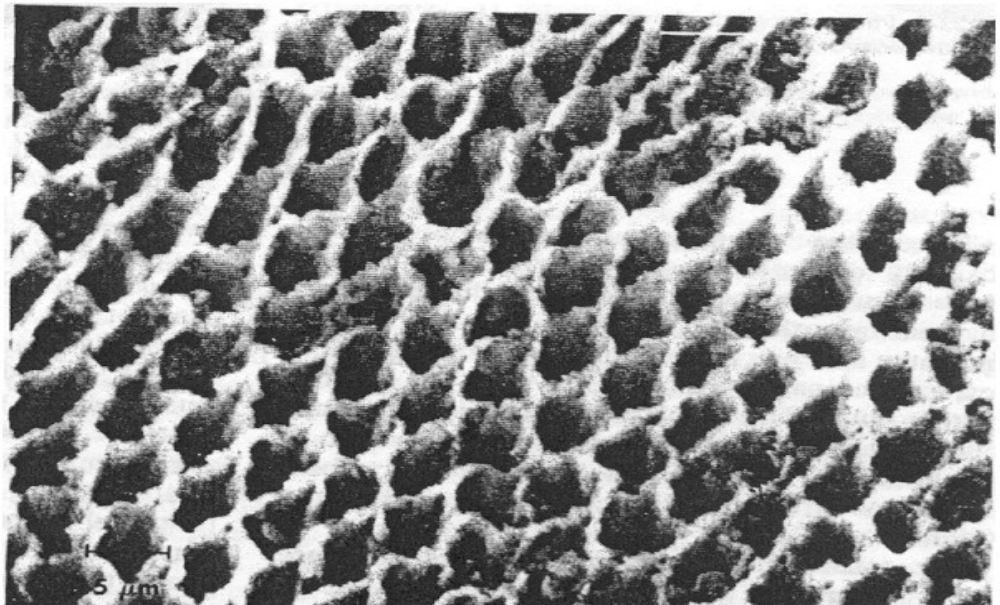
- Use dry air
  - air dry for min 10 seconds

# *Apply Conditioner*

- Phosphoric acid (37% - 50%)
  - apply with brush
  - cotton pellet

  **Use gentle dabbing motion, may damage enamel rods**
- Purpose
  - create surface irregularities
  - increase size of microspaces between enamel rods
  - remove bacterial plaque

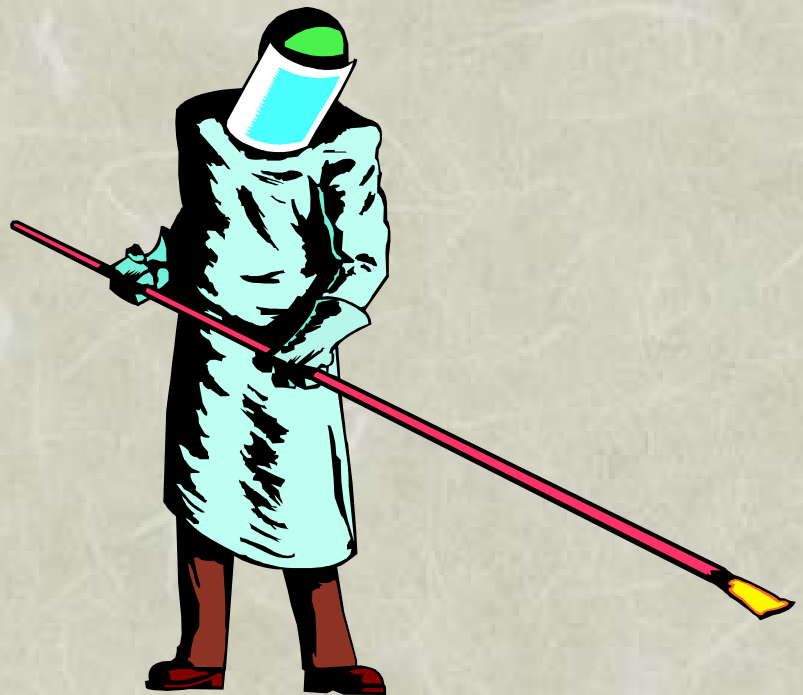
***Fig. 22-4.*** **Scanning electron micrograph showing random distribution of pits and fissures on occlusal surface.** (From Gwinnett AJ: *J Am Soc Prevent Dent* 3:21, 1973.)



# *How Long?*

Acid Etch Gel

- Permanent teeth- 15-20 seconds
- Primary teeth - (baby) 20-30 seconds
- Contaminated w/ salvia- 10 seconds



# *Rinse Thoroughly*

- Purpose
  - remove excess acid
  - prevent saliva from reaching area
- Maintain dry area
  - remove and replace wet cotton rolls
  - suction constantly applied
  - beware of high speed suction

# *Dry Enough?*

- Surface should appear dull and chalky white when air dried (20 sec)
- Primary teeth or older permanent teeth may
  conditionir

# *Apply Sealant*

- Placement
  - most posterior tooth first
  - only 2 teeth per mix
  - flow into the deepest portion of the pit of fissure
    - avoid ridges and cusp tips

**If using chemical mix, do not disturb the mix!!**

# *Curing light*

- Always wear eye protection
- Hold tip of light close as possible to the tooth without compromising the sealant
- 30-45 sec

# *After Curing*

- Examine sealant
- Check all margins with explorer
- Test for retention
- Check occlusion with articulating paper
- Patient will know if sealant needs adjusting

# *Factors That Influence Retention*

- Improper Technique
  - Main reason sealants fail
- Any contaminant during application will reduce effectiveness
- Recheck sealants yearly

-Remember to re-etch for 10 sec if replacing

# *Fluoride*

- Important to apply a fluoride treatment after sealant is placed
  - re-mineralizes  the tooth area that was etched and not sealed
- Instant failure when attempting to apply sealants after a fluoride treatment!!

# *Summary*

- Defined a sealant
- Identified two types of sealants
- Listed criteria for selecting teeth
- Listed steps in placement of a sealant